State of Id
DEPARTMENT OF HEALTH AND WELFARE
Division of Environmental Quality

1410 N. Hilton
Boise, Idaho 83706

CECIL D. ANDRUS
Governor
RICHARD P. DONOVAN
Director

September 18, 1990

MEMORANDUM

TO: Mike Silverman

FROM: Brian R. Monson BRM

SUBJECT: Zilog Inspection Report July 20, 1990

Attached is a Hazardous Waste Management Act/RCRA Compliance Inspection Report for the Zilog, Incorporated. Please review the inspection report and provide any comments you may have.

Please contact me at 334-5879 if you have any questions.

Brian R. Monson, Manager
Compliance Section
Hazardous Materials Bureau

BRM/kh

Attachment

HWMA/RCRA COMPLIANCE INSPECTION NARRATIVE REPORT

Facility:

Zilog, Incorporated

Date of Inspection:

July 20, 1990

EPA Identification Number:

IDD097762231

Address:

2601 11th Avenue
Nampa, Idaho 83651

Report Prepared By:

Charleen M. Roberts
Hazardous Waste Compliance Officer
Hazardous Materials Bureau
Idaho Department of Health and Welfare (IDHW)

Inspection Participants:

Charleen M. Roberts, IDHW/HMB
Richard Price, EPA/OSHA Engineer, Zilog

Purpose:

The purpose of the inspection was to assess the facility's compliance with the Idaho Hazardous Waste Management Act and Resource Conservation and Recovery Act.

Background:

Zilog, Incorporated, manufactures integrated circuits. The plant has operated in Nampa, Idaho since 1979. Various photosensitive polymers (photoresists) are used in the production of semiconductor "chips." The ultraviolet sensitive photoresists are used to imprint circuits on substraight material. When exposed through a photographic master, the photoresist polymerizes to form the desired circuit pattern. The unexposed monomer is then removed by various washing and spinning operations. Water, acetone, 1,1,1-trichlorethane, and trichlorotrifluoroethane are used for cleaning and degreasing.

Zilog, Inc submitted a Notification of Hazardous Waste Activity dated November 18, 1980. The original notification indicated that the facility was both a hazardous waste generator and TSD facility. The facility notified as a TSD because of their wastewater treatment unit. Wastewater treatment units are exempt from permitting requirements and the EPA rescinded the Part A application in March of 1982.

The Idaho Department of Health and Welfare, Hazardous Materials Bureau conducted a RCRA Compliance Evaluation Inspection (CEI) on April 3, 1987. The facility was issued a Notice of Violation effective October 16, 1987. The violations were for manifest discrepancies, inadequacies in the contingency plan and for exceeding the 90 day accumulation time. A Consent Order was signed by the facility on December 28, 1987.

Inspection:

I arrived on-site at 0830 hours on July 20, 1990 and met with Richard Price, EPA/OSHA Engineer for Zilog. I began the inspection by reviewing required paperwork and then toured the facility.

Biennial Report - Zilog submitted their biennial report to the Idaho Department of Health and Welfare, Hazardous Materials Bureau on February 5, 1990 (Attachment 2). No discrepancies were noted.

Waste Determination - Zilog generates approximately 1000 gallons of hydraulic oil per year. The oil results from oil changes on production machinery. Mr. Price said that the oils pick up halogens from halogenated gases used in production. Due to the halogen content, Zilog was managing the oil as an F002 waste. He did not believe that it came into contact with actual F002 solvents. Appropriate hazard determinations appeared to have been made on all other waste streams.

Manifests and Land Disposal Restriction (LDR) Notification - I reviewed the manifests and LDR notifications for 1990. I reviewed manifests and LDR notifications for March 16, 1990, April 25, 1990 and June 14, 1990 (Attachment 3). No discrepancies were noted.

Training Records/Job Descriptions - Randy Friedly is the primary hazardous waste manager at Zilog. His duties include managing the hazardous waste storage area, labeling and dating containers, weekly inspections, and maintaining the manifest system. His job description (Attachment 4) does not mention his duties relative to hazardous waste management. His job description, although in his file, does not reference his

Mr. Friedly received his initial hazardous waste management training in 1985 and has received annual refresher training as required (Attachment 5). His personnel files do not contain a written description of the type and amount of training to be given. The requirement for training and the prescribed subjects are found in the facility's Contingency Plan.

All of Zilog's Process Support Technicians are required to transport spent photoresist (D001), used oils, and freon (F002) from production facilities to the hazardous waste storage room. I spoke with Ray Burney, one of approximately 17 Process Support Technicians. His job description is shown at Attachment 6. The job description does not reflect duties relative to hazardous waste management. The facility was unable to provide documentation that the Process Support Technicians were trained in hazardous waste management. Miscellaneous production personnel also transfer used photoresist (D001) from their machines into accumulation containers. There were no records of their added hazardous waste management duties or training as required.

Contingency Plan - A copy of the Contingency Plan was maintained on-site. The emergency coordinator list was outdated. The plan contained a description and capabilities of the emergency equipment, but did not contain the equipment location. The Contingency Plan stated that personnel evacuate from the building through marked evacuation routes, but did not include alternate evacuation routes. The plan did not contain procedures for the emergency coordinator to immediately identify the character, source, amount, and extent of released materials. The plan did not contain procedures for the emergency coordinator to follow in accessing health and environmental hazards.

Site Tour - We began our site tour in the solvent storage room. Hazardous waste and useable solvent are stored in the storage room. The door was marked with flammable hazard signs (Photo 1). All containers holding hazardous waste were closed. The containers were marked with the accumulation date and the words "hazardous waste." Hazardous waste is shipped off-site every 60 days. No accumulation times were exceeded. The storage room floor is sloped and has two floor drains. The floor drains are connected to the underground hazardous waste storage tank. Inspections are conducted daily (Attachment 7). Adequate aisle space was maintained between seperate compatibility groups of hazardous waste but was not between groups of similar hazardous waste (Photo 2.) The nearest telephone was approximately 20 feet from the solvent storage room in the acid storage room. Spill control equipment was located in the storage room. The fire extinguisher had been inspected in July 1990. Additional

spill control equipment is located approximately 100 feet down the loading dock in a cabinet (Photo 3.)

Zilog has an underground storage tank for acetone waste (Photo 4.) The tank is approximately eleven years old. Every 60 days the waste acetone is pumped from the tank into drums and sent off-site for management. The tank is "stuck" every day to measure liquid height. The tank does not contain waste cut-off devices or secondary containment. The facility was unable to produce certified documentation as to the tank's integrity. It is scheduled for removal in September and will be replaced by an above-ground storage tank with secondary containment.

Zilog has a freon degreaser (Photo 5) in the Modular III area. The degreaser has a 15 gallon capacity and is changed as business dictates. The "gold" room has a 15 gallon capacity 1,1,1-trichloroethane degreaser (Photo 6). It is changed approximately every two weeks. Process Support Technicians are responsible for transporting the used solvents to the solvent storage room.

Zilog neutralizes acidic waste in the neutralization pits shown in Photo 7. The acid waste is piped directly into the pits where it is neutralized with sodium hydroxide and discharge under an NPDES permit at a final pH of 6 - 9. The neutralization pit does not generate a hazardous waste.

We then toured the "yellow room" of Modular II. Circuit boards are imprinted in the "yellow room" using ultraviolet light sensitive polymers. I could not take photographs in Modular II because the camera flash would develop the polymers. The "yellow room" has six photoresist stations. Each station applies the photosensitive polymers to discs, develops, rinses with flammable solvents, then spins the disc to remove excess monomers. The flammable waste drains directly into a small plastic jug under the machine. When the jug is full, the operator drains the waste into a 5 gallon jug stored in the hall. The containers under the machines were not marked with words identifying their contents.

At the time of inspection, three 5 gallon jugs containing approximately 8 gallons of waste photoresist were stored in the hall outside the "yellow room." The jugs were not marked with words identifying their contents or with accumulation dates. Inspections were not required on the containers because they are transferred daily to the solvent storage room. One container was open.

After we left the "yellow room", we went to the ion implanting room. Arsine gas is used to implant ions into chips. Arsenic contaminated debris is collected in a 5 gallon, plastic lined

container marked with words identifying its contents. No discrepancies were noted.

We then visited the Backgrinding room that contains a 1,1,1-trichlorethane degreaser. No discrepancies were noted.

We concluded the tour and I had an outbriefing with Mr. Jim Petterson, Facilities Manager, Richard Price, EPA/OSHA Engineer, and Randy Friedly, Materials Technician.

Summary:

Zilog generates approximately 10,000 pounds of hazardous waste per month. They were inspected under the large quantity generator requirements for hazardous waste management. The following apparent violations of the Idaho Hazardous Waste Management Act (HWMA) and Resource Conservation Recovery Act (RCRA) were discovered during the compliance evaluation inspection of Zilog:

IDAPA 01.5006.03 (40 CFR 262.34(a)). The generator may accumulate hazardous waste on site for 90 days or less provided that they comply with the following:

40 CFR 262.34(a)(1). The generator places his waste in containers and complies with Subpart I of 40 CFR 265. This requires that containers holding hazardous waste be closed during storage, except adding or removing waste.

At the time of inspection, three (3) 5 gallon jugs containing D001 waste photoresist were stored in the hall outside the Modular II "yellow room." One container was open.

40 CFR 262.34(a)(2). The generator may accumulate hazardous waste on-site for 90 days or less provided that the date each period of accumulation begins is clearly marked on each container.

At the time of inspection, three (3) five gallon jugs containing D001 waste photoresist were stored outside the Modular II "yellow room." The jugs were not marked with date upon which accumulation began.

40 CFR 262 (a)(3). The generator may accumulate hazardous waste on-site for 90 days or less provided that the accumulation containers are labeled with the words "Hazardous Waste."

At the time of inspection, three (3) five gallon jugs containing D001 waste photoresist were stored outside the

Modular II "yellow room." The containers were not marked with the words "Hazardous Waste."

40 CFR 262.34(a)(4). The generator may accumulate hazardous waste on-site for 90 days or less provided that they comply with 40 CFR 265.16 and Subparts C and D of 40 CFR 265.

40 CFR 265.16(a)). Facility personnel must complete a program of classroom of on-the-job training. The training must teach them to perform their duties in a way that ensures compliance with the hazardous waste management rules and regulations.

At the time of inspection, Process Support Technicians and various production personnel were responsible for managing or transporting hazardous waste. These personnel had not been specifically trained in hazardous waste management.

40 CFR 265.16(d)(1). The owner or operator must maintain the job title for each position at the facility relative to hazardous waste management, and the name of the employee filling each job.

At the time of inspection, Zilog was not maintaining the job title and name of the Process Support Technicians and various production personnel relative to their hazardous waste management duties.

40 CFR 265.16(d)(2). The owner or operator must maintain a written job description for personnel involved in hazardous waste management. The job description must include requisite skill, education, or other qualifications and the duties for facility personnel assigned hazardous waste management duties.

At the time of inspection, Zilog was not maintaining written job descriptions for Randy Friedly, the Process Support Technicians, or the various productions personnel describing their duties relative to hazardous waste management.

40 CFR 265.16(d)(4). The facility must maintain records documenting that the training or job experience has been given to and completed by personnel relative to hazardous waste management duties.

At the time of inspection, Zilog was not maintaining records documenting training or job experience

relative to hazardous waste management had been given and completed by the Process Support Technicians and various production personnel responsible for hazardous waste management duties.

40 CFR 265.35. The owner or operator must maintain aisle space to allow unobstructured movement of personnel, fire protection equipment, spill control equipment to any area of the facility.

At the time of the inspection, adequate aisle space was not being maintained between containers of compatible hazardous waste in the solvent storage rooms.

40 CFR 265.52(a). The facility must maintain a contingency plan that describes the actions facility personnel will take to comply with § 265.56 in response to fires, explosions and unplanned sudden or non-sudden releases of hazardous waste.

40 CFR 265.56(a)(2)(b) requires that the emergency coordinator immediately identify the character, exact source, amount and real extent of the released materials.

At the time of inspection, the contingency plan did not contain procedures for the emergency coordinator to follow to immediately identify the character, source, amount of and extent of released materials.

40 CFR 265.56(a)(2)(c) requires that that emergency coordinator assess possible health hazards to human health or the environment from a release, fire, or explosion. The assessment must consider the direct and indirect effects of the release.

At the time of inspection, the contingency plan did not contain procedures for the emergency coordinator to follow in assessing direct and indirect health and environmental hazards.

40 CFR 265.52(e). The facility must maintain a contingency plan that includes a list of all emergency equipment at the facility. The list must include the location, physical description and capabilities of the equipment.

At the time of the inspection, the contingency plan did not include the location of the emergency equipment.

40 CFR 265.52(f). The facility must maintain a contingency plan that includes an evacuation plan for the facility. The plan must describe evacuation and alternative evacuation routes.

At the time of inspection, the contingency plan did not describe alternate evacuation routes for the facility.

40 CFR 265.54(d). The contingency plan must be reviewed and immediately amended if the list of emergency coordinators changes.

At the time of inspection, the contingency plan had not been amended to reflect changes in the emergency and alternate emergency coordinators.

IDAPA § 01.5006.03 (40 CFR 262.34(c)(1)(ii)). The generator may accumulate as much as 55 gallons of hazardous waste in containers at or near the place where the wastes initially accumulate provided that the containers are marked with words identifying the contents or the words "Hazardous Waste."

At the time of inspection, D001 hazardous waste was accumulating in plastic jugs under the photoresist machines in the "yellow room" of Modular II. The containers were not marked with words identifying their contents or the words "Hazardous Waste."

IDAPA § 01.5009.10 (40 CFR 265.191(a)). The owner or operator must obtain and keep at the facility a written assessment reviewed and certified by an independent, qualified, registered professional engineer attesting to the tank system's integrity.

At the time of inspection, Zilog was unable to produce documentation by a certified, independent, qualified, registered professional engineer attesting to the tank's integrity.

IDAPA § 01.5009.10 (40 CFR 265.194(b)(2)). The owner or operator must use appropriate controls and practices to prevent spills and overflows from tanks. At a minimum these include overfilling prevention controls such as level sensing devices, high level alarms, and automatic feed cutoff.

At the time of inspection, the continuous feed waste acetone tank was not equipped with level sensing devices, level alarms, or automatic feed cutoff devices.

RECOMMENDATIONS:

I recommend that Zilog, Inc. receive a Notice of Violation for the above mentioned apparent violations.

Charleen M. Roberts
Hazardous Waste Compliance Officer
Hazardous Materials Bureau

CMR/kh